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U.S. Department of Energy
Idaho Operations Office

Waste Management Plan for Operable Unit 3-13, Group 5, Snake River Plain Aquifer Project

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U.S. Department of Energy
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ABSTRACT

This Waste Management Plan addresses the various waste streams and types, and describes disposition of waste streams generated in support of this project. Requirements for the characterization, staging, and disposition are also discussed in this document.

Two primary activities will be implemented under the Group 5 project. The first is an evaluation of the model-predicted hot spot within the HI interbed to check the Waste Area Group 3 remedial investigation/feasibility study model accuracy and update the model predictions for contaminants of concern concentrations in 2095 and beyond. The collection of data to support this task is described in the Plume Field Sampling Plan for the drilling of four new wells outside the Idaho Nuclear Technology and Engineering Center facility fence. The second activity is groundwater-monitoring activities to evaluate the flux of contaminants of concern to Group 5 from the Idaho Nuclear Technology and Engineering Center perched water and vadose zone and the Snake River Plain Aquifer beneath the Idaho Nuclear Technology and Engineering Center facility. The collection of data to support this groundwater contaminant of concern trend monitoring initially involves establishing a baseline by sampling approximately 47 Snake River Plain Aquifer wells the first year. Following baseline sampling, a subset of 18 wells at and near the facility footprint and downgradient will be sampled yearly as discussed in the Group 5 Long-Term Management Plan. The Snake River Plain Aquifer project is designed to address remedial design/remedial action goals presented in the Waste Area Group 3, Operable Unit 3-13, Record of Decision.

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ACRONYMS

ARAR	applicable or relevant and appropriate requirement
CERCLA	Comprehensive Environmental, Response, Compensation and Liability Act
CFA	Central Facilities Area
CFR	Code of Federal Regulations
COC	contaminant of concern
DOE-ID	Department of Energy Idaho Operations Office
FSP	Field Sampling Plan
ICDF	INEEL CERCLA Disposal Facility
IDEQ	Idaho Department of Environmental Quality
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
IW	industrial waste
LLW	low-level waste
LTMP	Long-Term Monitoring Plan
MCL	maximum contaminant level
MLLW	mixed low-level waste
NLCI	no-longer-contained-in
OU	operable unit
PPE	personal protective equipment
RCRA	Resource Conservation and Recovery Act
RI/BRA	remedial investigation/baseline risk assessment
RI/FS	remedial investigation/feasibility study
ROD	Record of Decision
SAM	Sample and Analysis Management
SRPA	Snake River Plain Aquifer

SSA	Staging and Storage Annex
SSSTF	Staging, Storage, Sizing, and Treatment Facility
WAG	waste area group
WGS	Waste Generator Services
WMP	Waste Management Plan

Waste Management Plan for Operable Unit 3-13, Group 5, Snake River Plain Aquifer Project

1. INTRODUCTION

The Idaho National Engineering and Environmental Laboratory (INEEL) is divided into 10 waste area groups (WAGs) to better manage environmental operations. The Idaho Nuclear Technology and Engineering Center (INTEC) is designated as WAG 3. Operable Unit (OU) 3-13 was investigated to identify potential contaminant releases and exposure pathways to the environment from individual sites as well as the cumulative effects of related sites.

The OUs within WAG 3 have been investigated in several phases. A comprehensive OU 3-13 remedial investigation/baseline risk assessment (RI/BRA) (Department of Energy Idaho Operations Office [DOE-ID] 1997a) was conducted for OU 3-13 to determine the nature and extent of contamination and corresponding potential risk to human health and the environment from various exposure pathways and scenarios. Based on RI/BRA results, INTEC release sites were further segregated into seven groups based on contaminants of concern (COCs), accessibility, or geographic proximity to allow analysis of remedial action alternatives in the WAG 3 feasibility study (DOE-ID 1997 and 1998). In the OU 3-13 Record of Decision (ROD) (DOE-ID 1999), the contaminated portion of the Snake River Plain Aquifer (SRPA) outside the INTEC security fence boundary where COC concentrations in groundwater exceed drinking water standards was designated Group 5. The OU 3-13 ROD requires remediation of the SRPA if assessment of the WAG 3 remedial investigation/feasibility study (RI/FS) model-predicted contaminant hot spot and contaminant concentration trends indicate the concentrations of the Group 5 COCs will exceed maximum contaminant levels (MCLs) in 2095 and beyond.

The purpose of this Waste Management Plan (WMP) is to address the characterization, staging, and disposition of waste expected to be generated during two distinct Group 5 activities mentioned below:

- Collecting data to support the Plume Field Sampling Plan (FSP) to evaluate the model- predicted hot spot within the HI interbed to check the RI/FS model accuracy (DOE-ID 2002a)

- Collecting data to support the groundwater COC trend monitoring discussed in the Group 5 Long-Term Monitoring Plan (LTMP) (DOE-ID 2003a).

Potential waste types from the project include industrial waste (IW), low-level (radioactive) waste (LLW), Resource Conservation and Recovery Act (RCRA) hazardous waste, and mixed low-level waste (MLLW). This plan presents a "road map" for the characterization, staging, and disposition of waste generated during this project.

Waste material generated during this project is part of the post-ROD activity; therefore, the waste is remedial design/remedial action waste and will be managed as outlined in this WMP. All waste will be segregated, containerized, labeled, stored, and disposed of in accordance with the applicable or relevant and appropriate requirements (ARARs) identified for Group 5 in the ROD. Waste Generator Services (WGS) and WAG 3 technical staff are responsible for implementing this WMP with support from INTEC personnel.

Section 2 of this WMP discusses the site background and scope of the OU 3-13 Group 5 SRPA project. Waste streams and volumes are discussed in Section 3. Section 4 details waste stream characterization and management, and Section 5 describes recordkeeping and inspection requirements in addition to waste minimization options. Appendix A presents an ARAR compliance matrix showing which regulations apply to Group 5 management of the waste generated during this project.

2. SITE BACKGROUND AND PROJECT SCOPE

The following information is provided to support waste management planning issues specific to potential volumes of waste, waste determinations for specific media (for example, saturated versus unsaturated drill cuttings), and administrative information (for example, inside or outside the INTEC security fence).

Two primary activities will be implemented under the Group 5 project. The first activity is an evaluation of the model-predicted hot spot within the HI interbed to check the WAG 3 RI/FS model accuracy and update the model predictions for COC concentrations in 2095 and beyond. The collection of data to support this task is described in the Plume FSP (DOE-ID 2002a). The second activity is groundwater monitoring activities to evaluate the flux of COCs to Group 5 from the INTEC perched water and vadose zone (OU 3-13, Group 4) and the SRPA beneath the INTEC facility. The collection of data to support this ground water COC trend monitoring is discussed in the Group 5 LTMP (DOE-ID 2003a). Each activity is briefly described.

2.1 Plume FSP Scope

The Group 5 Plume FSP program will include coring boreholes, collecting deep HI sedimentary interbed samples for chemical and geotechnical analysis, lithologic and geophysical logging of coreholes, collecting aquifer water samples with straddle packers, and pump testing zones to evaluate production capacity. The basic objective of the Plume FSP is evaluating whether the OU 3-13 RI/FS modeling is accurate in predicting that a hot spot of primarily I-129 exists south of INTEC in the vicinity of wells USGS 111 and USGS 113 of sufficient magnitude to exceed MCLs in 2095 and beyond.

The scope of the Plume FSP involves installing four new wells in the vicinity of the model-predicted hot spot south of INTEC to evaluate the existence and magnitude of the predicted hot spot. Figure 2-1 shows the locations of the new wells to be installed. Samples for chemical analysis of the COCs will be collected from interbed materials in addition to samples for physical and geotechnical analysis and to support hazardous waste determinations. The samples will provide empirical data on the presence of I-129 in the SRPA and physical properties of the HI interbed south of INTEC to support refining the groundwater model. Following drilling, a straddle packer system will be used at the four boreholes to collect groundwater samples for vertical profiles. If results of the vertical profiling indicate hot zones where COC action levels are exceeded, additional pump testing may be required to evaluate production capacity of the specific hot zones. This information will be analyzed to generate a volumetric estimate of the hot spot where concentrations are predicted to exceed MCLs in 2095 and beyond.

2.2 LTMP Scope

The basic objective of the LTMP actions is to evaluate the flux of contaminants into the SRPA outside of the INTEC security fence line (Group 5) from contamination that is currently in the vadose zone and aquifer beneath the footprint of the INTEC facility. These data will be evaluated over time to determine if the flux of COCs into Group 5 will result in exceeding MCLs in 2095 and beyond. This will be accomplished through sampling aquifer monitoring wells in the vicinity of INTEC to track COC concentration trends through the institutional control period. Initial baseline sampling will include all wells at and downgradient of WAG 3 (approximately 47 wells) to the INEEL Landfill Complex at the Central Facilities Area (CFA). Following baseline sampling, a selected set of 18 wells will be sampled annually under the LTMP. The two types of wells monitored for the LTMP include (1) INTEC facility monitoring wells comprising 18 wells at and near the facility footprint and (2) plume monitoring wells comprising seven wells located downgradient of INTEC roughly following the centerline of the INTEC groundwater contaminant plumes. Figure 2-2 shows the selected aquifer wells to be monitored.

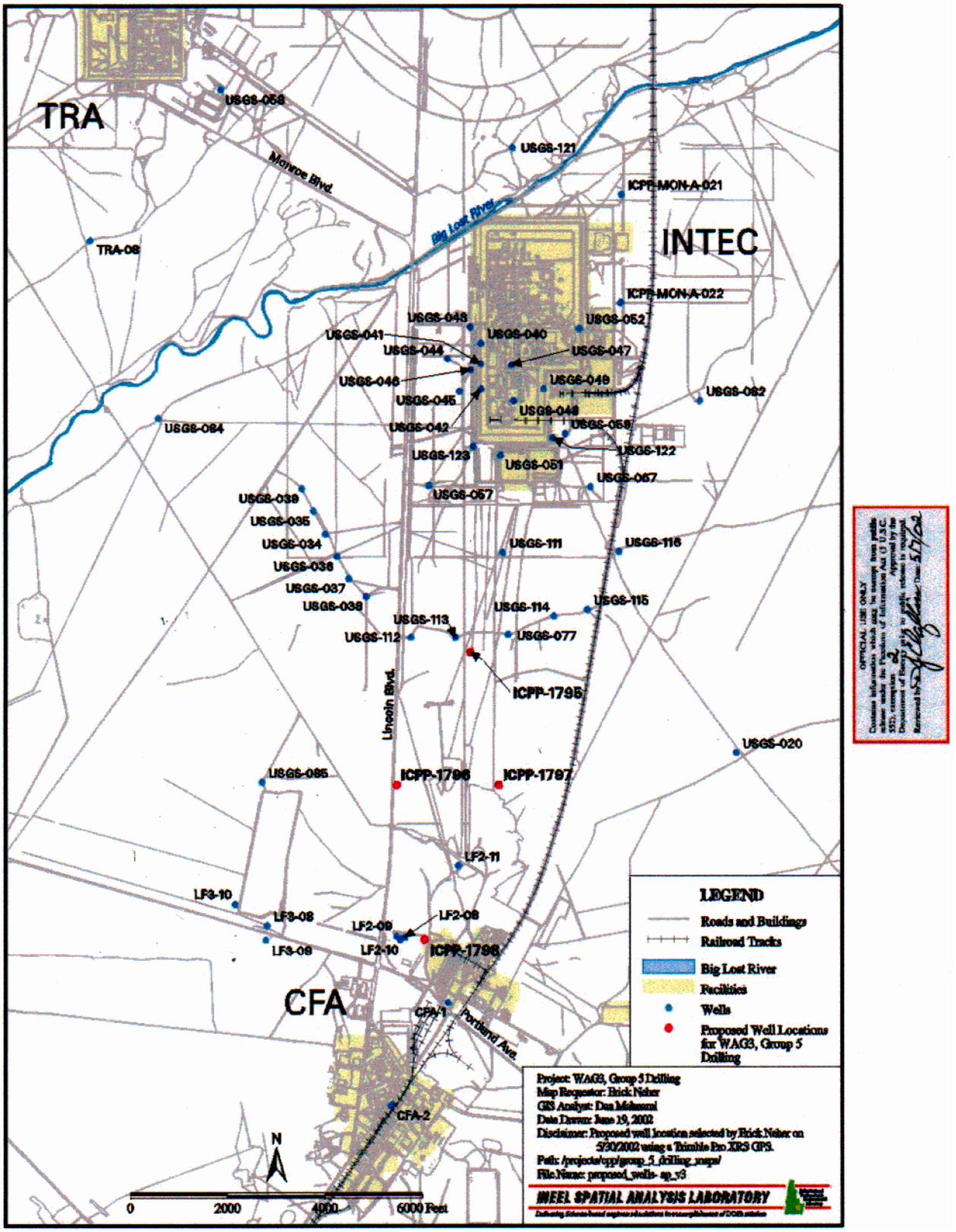

Figure 2-1. Location of new wells.

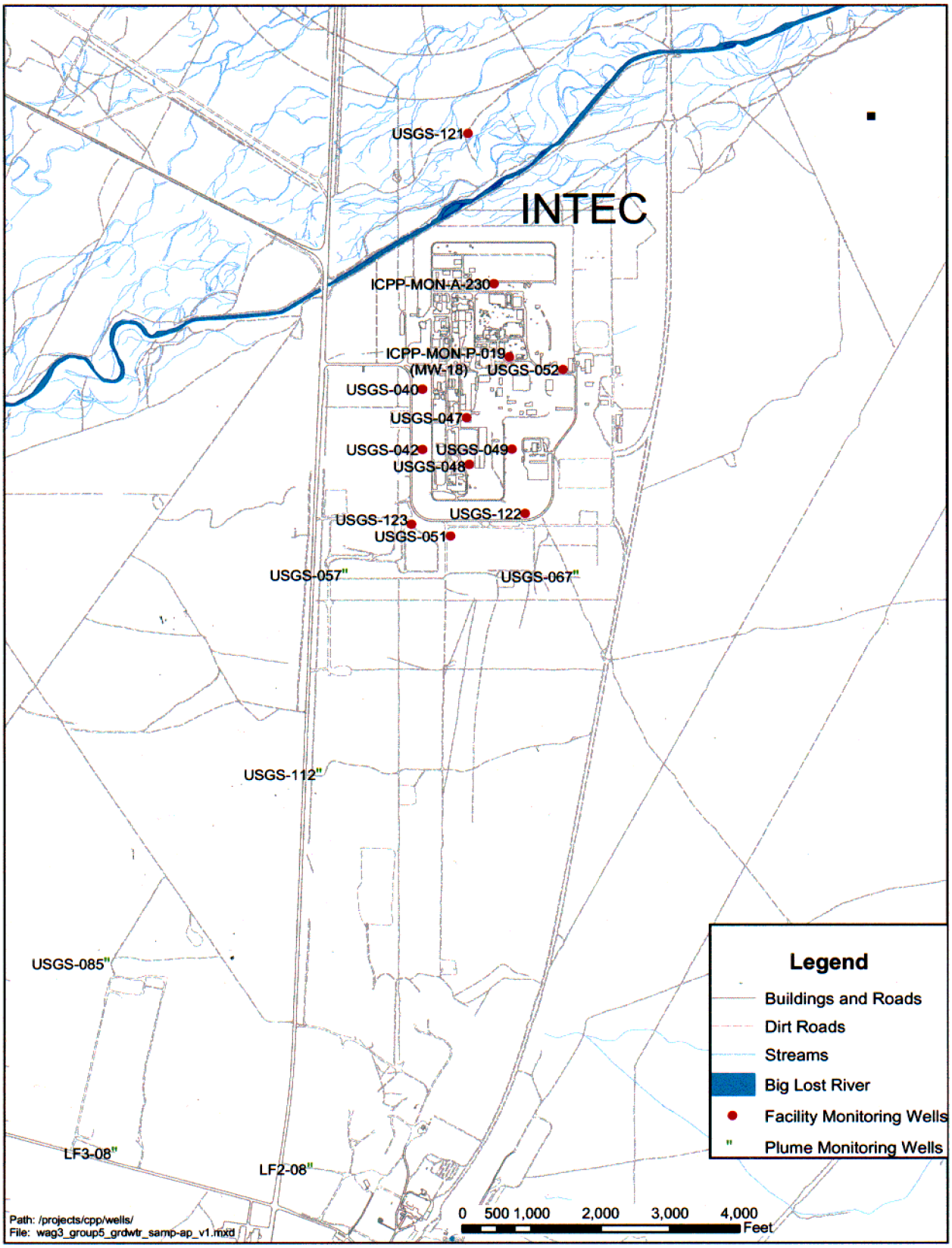

Figure 2-2. INTEC groundwater wells for long-term monitoring.

3. PROJECT-SPECIFIC WASTE STREAM TYPES AND VOLUMES

This section describes each anticipated waste stream from Plume FSP and LTMP activities and an estimated volume of each. The waste streams associated with the Plume FSP activities are separated into the saturated and unsaturated zones because they will be managed as different waste types. The interbed wells are south of the INTEC security fence and are thus in areas with no surface contamination. Therefore, waste generated from the unsaturated zone will not be managed as LLW or MLLW. Based on current determinations, waste generated from the saturated zone will likely be managed as LLW. In all activities, waste will be managed according to hazardous waste determinations. Details of each waste stream and anticipated volumes generated from the Plume FSP activities in the unsaturated zone and saturated zone and LTMP activities are in the following sections. Volume estimates for each anticipated waste stream from the Group 5 SRPA Project are shown in Table 3-1.

3.1 Personal Protective Equipment

Personal protective equipment (PPE) in the form of anticontamination clothing will be generated in support of the Group 5 SRPA project. The types and use of PPE are specified in the Group 5 Health and Safety Plan (INEEL 2003), which is implemented by Bechtel BWXT Idaho, LLC. PPE used for this project may include coveralls, shoe covers, boots, gloves, glove liners, hoods, and duct tape. Coveralls and hoods are generally made of paper or Tyvek. Gloves are generally latex or nitrile, and the liners are disposable cloth. Shoe covers and boots are generally polyethylene or rubber. Polyvinyl chloride boots and shoe covers will not be used. Duct tape is used to secure the various layers of PPE. The PPE will be bagged and segregated according to site-specific considerations (for example, zone of saturation and projected-waste determination).

Drilling in the unsaturated zone (0–137 m [0–450 ft]) will generate primarily clean PPE since the drilling locations are all in areas of no known surface contamination. The volume of PPE waste generated from unsaturated drilling is estimated to be 8.0 m^3 (10.5 yd^3). This estimate is based on four persons generating 0.23 m^3 (0.3 yd^3) of PPE per day at four sites. The total volume of PPE waste generated for the Group 5 FSP activities in the saturated zone is estimated to be 9.2 m^3 (12.0 yd^3). This estimate is based on four persons generating 0.23 m^3 (0.3 yd^3) of PPE per day. The total volume of PPE waste generated for the Group 5 LTMP groundwater monitoring activities is estimated to be 5.4 m^3 (7.1 yd^3) for 47 wells (41.3 m^3 [54 yd^3] for 18 wells for 20 years). This assumes 0.11 m^3 (0.14 yd^3) of PPE is generated for each well.

3.2 Unused/Unaltered Sample Material

Unused/unaltered sample material may be generated from the Group 5 SRPA project drilling and sampling in the form of excess cores from the HI interbed, drill cuttings, unaltered laboratory samples, and groundwater. Core samples will be collected from saturated zones for geotechnical, chemical, and physical analyses. Cores may be archived for future analysis or evaluation. Groundwater and other aqueous samples (e.g., quality control samples) will be preserved as needed before shipment to the laboratory. Samples of solid environmental media and some aqueous samples (e.g., those for analysis of semivolatile compounds) are typically only chilled between collection and analysis. During field operations, excess material not needed for laboratory analysis is likely to be generated. Unused and unaltered sample materials may be returned to their borehole of origin or placed with like materials from the same site and thereby will not become waste.

Table 3-1. Estimated volume of waste generated during the OU 3-13 Group 5 SRPA project.

OU 3-13 Group 5 Waste Stream	Estimated Volume			
	Plume FSP Unsaturated Zone	Plume FSP Saturated Zone	LTMP 2001 Baseline	LTMP Groundwater Monitoring (20 years)
Personal protective equipment	8.0 m^3 (10.5 yd^3)	9.2 m^3 (12 yd^3)	5.4 m^3 (7.1 yd^3)	41.3 m^3 (54 yd^3)
Unused/unaltered sample material	0.76 m^3 (1 yd^3)	76 L (20 gal)	712 L (188 gal)	5451 L (1440 gal)
Drill cuttings	13 m^3 (17 yd^3)	4.5 m^3 (6 yd^3)	NA	NA
Analytical residues/sample preservative residues	NA	19 L (5 gal)	179 L (47 gal)	1363 L (360 gal)
Sample containers	NA	0.06 m^3 (2.2 ft^3)	0.3 m^3 (11 ft^3)	1.2 m^3 (44 ft^3)
Petroleum product spills	0.42 m^3 (15 ft^3) (all plume FSP work)		0.17 m^3 (6 ft^3)	0.85 m^3 (30 ft^3)
Development/purge water	NA	139,379 L (36,820 gal)	160,123 L (42,300 gal)	1,362,748 L (360,000 gal)
Decontamination fluids	568 L (150 gal)	189 L (50 gal)	356 L (94 gal)	2725 L (720 gal)
Contaminated equipment	NA		NA	NA
Miscellaneous wastes	0.76 m^3 (1 yd^3) (all plume FSP work)		0.76 m^3 (1 yd^3)	3.8 m^3 (5 yd^3)

NA = not applicable

The volume of unused/unaltered sample material from activities in the unsaturated zone is estimated at 0.76 m^3 (1 yd^3). The volume of unused/unaltered sample material from activities in the saturated zone is estimated at 76 L (20 gal) based on 15 L (4 gal) generated at each site. The volume of unused/unaltered sample material from the LTMP groundwater monitoring is estimated to be at 712 L (188 gal) for the baseline sampling and 5,451 L (1,440 gal) for monitoring 18 wells for 20 years. This assumes 15 L (4 gal) generated at each site.

3.3 Drill Cuttings

Plume FSP activities are expected to generate substantial volumes of drill cuttings. The cuttings can be deposited into waste drums, roll-off boxes, fractionation tanks, or other suitable waste containers. Containers are required to be Department of Transportation compliant and will be staged in the vicinity of each well with proper secondary containment.

Drill cuttings will be generated from both the unsaturated zone and SRPA during the Group 5 drilling activities. Drill cuttings from above and below the water table are estimated separately because, at the location of the new wells, drilling will not encounter contaminated media until the drilling of the new aquifer monitoring wells. The depth to water in the vicinity of the new wells is approximately 137 m (450 ft) and with an average borehole diameter of approximately 0.3 m (1 ft); the volume of drill cuttings anticipated to be generated from the unsaturated zone is approximately 65 m^3 (85 yd^3). The drilling of new wells will generate drill cuttings from the saturated zone. The new wells will penetrate approximately 60 m (200 ft) of the SRPA. With an average borehole diameter of approximately 0.15 m (0.5 ft), the estimated volume of drill cuttings from the saturated zone is 22.5 m^3 (30 yd^3).

Drill cuttings from the saturated zones will be sampled to support a hazardous waste determination. The analyses will include total metals, gamma-emitting radionuclides, and isotopic alpha/beta analyses.

No drill cuttings will be generated during the LTMP activities.

3.4 Analytical Residues/Sample Preservative Residues

Field preparation and laboratory analysis may produce sample preservation and analytical residues. The characteristics of these will vary based on the planned analyses, but will include both aqueous and organic solutions. Many chemical analyses, including those for organic and radiochemical substances, utilize flammable solvents such as hexane, toluene, acetone, and methanol. Aqueous solutions produced during most chemical analyses, while usually mostly water, contain varying percentages of acids and bases, such as sodium hydroxide, sulfuric acid, hydrochloric acid, nitric acid, and acetic acid. Groundwater and other aqueous samples (e.g., quality assurance samples) are often preserved with acids and occasionally with bases prior to shipment to the laboratory. These are considered sample preservation residues rather than unaltered sample materials.

Analytical residues/sample preservative residues would result from aqueous samples preserved with acidic/basic solutions. The volume of analytical residues/sample preservative residues that may be generated during the Plume FSP activities in the saturated zone is estimated at less than 19 L (5 gal). Unless samples are contaminated with polychlorinated biphenyls or dioxins, the off-Site laboratory may manage this waste stream in accordance with their Sample and Analysis Management (SAM) contract.

The estimated volume of LTMP analytical residues/sample preservative residues is 179 L (47 gal) for the first round of 47 wells and 1,363 L (360 gal) for the 18 wells for 20 years.

3.5 Sample Containers

Split-spoon samplers, Lexan tubes, or other thin-walled sample devices are used to collect undisturbed cores of geologic material from boreholes. These sample devices may be composed of steel, aluminum, Teflon, brass, or plastic. These will be decontaminated if possible. If cores retrieved from a borehole show elevated contamination levels, it will be necessary to decide whether the retrieved core sampler should be disposed of or decontaminated. Lexan tubes used during drilling and sampling may be radioactively contaminated. If Lexan tubes cannot be decontaminated, they will become a waste.

Sample containers would become a waste stream if they were no longer usable and disposal was required. Generally, unaltered, unused, sample material is returned from the analytical laboratory in the original sample container. If an empty container (e.g., following return of the sample material to the source or to an appropriate waste stream) cannot be successfully decontaminated, the empty sample container becomes a waste. If the integrity of a sample container has been breached (for example, a broken jar), the container may become a waste after environmental media have been containerized. Environmental media samples are typically collected in glass, Teflon, or high-density polyethylene containers with Teflon-coated lids. Waste sample containers are not expected to be a significant waste stream.

The volume of waste sample containers and Lexan tubes expected to be waste generated during the installation of the SRPA wells and sampling of four boreholes is estimated at 0.06 m^3 (2.2 ft^3). The volume of sample container waste generated during LTMP baseline sampling is approximately 0.31 m^3 (11 ft^3). The volume for the groundwater monitoring sampling is approximately 1.2 m^3 (44 ft^3) assuming 0.6 m^3 (2.2 ft^3) is generated each year for 20 years.

3.6 Petroleum Product Spills

Small quantities of petroleum products such as hydraulic fluid, transmission fluid, or diesel fuel could spill during Group 5 activities. Hydraulic fluid can originate from leaks in equipment seals or through ruptured hoses. A liner beneath the drill rig (and any other equipment containing petroleum products) will prevent spills from contacting underlying soil, and any spills will be absorbed with a spill kit (absorbent pads and rags). The estimated volume of soaked petroleum product wipes generated as waste is estimated to be 0.42 m^3 (15 ft^3) for all plume FSP activities. The volume of petroleum-product-soaked wipes generated as waste during LTMP baseline sampling is 0.17 m^3 (6 ft^3) and 0.85 m^3 (30 ft^3) for groundwater monitoring, assuming 0.04 m^3 (1.5 ft^3) is generated per year.

3.7 Purge Water

Substantial volumes of purge and development water are expected during the Group 5 SRPA activities. Removing groundwater prior to sampling is required to approximate in situ groundwater conditions in an aquifer. Typically, if groundwater production is sufficient, three well volumes of groundwater are removed prior to sample collection. Field parameters (for example, pH, conductivity, and temperature) are also used to ensure that the groundwater samples are indicative of in situ conditions.

No wells will be placed in the unsaturated zone during this project; therefore, no purge water will be produced from the unsaturated zone. Substantial volumes of purge water could be generated from purging and sampling the saturated zone for the Plume FSP activities. Based on past wells completed in the SRPA, the water column is estimated to be 61 m (200 ft) for the new wells. The estimated volume of development and purge water produced from drilling and sampling the four wells is estimated to be 139,379 L (36,820 gal). This estimate includes 105,992 L (28,000 gal) for drilling, 17,034 L (4,500 gal)

for vertical profile sampling, and 16,355 L (4,320 gal) for 24-hour-pump sampling. The well development water will be placed in a settling/frac tank where the sediments will settle out. Upon settling, the solids will be managed with the saturated drill cuttings and the water will be managed with the purge water.

Substantial volumes of purge water could be generated during purging and sampling of the groundwater wells for the LTMP. The volume of purge water produced during the LTMP baseline sampling is estimated to be 160,123 L (42,300 gal) and 1,362,748 L (360,000 gal) for groundwater monitoring 18 wells for 20 years.

Purge water will be sampled to support a hazardous waste determination. The analyses will include total metals, gamma-emitting radionuclides, and isotopic alpha/beta analyses.

3.8 Decontamination Fluids

Decontamination of all drilling and downhole sampling equipment will ensure that the environmental samples are not impacted by cross contamination. The drill pipe will be decontaminated before it is moved to each new drilling location. Dry decontamination methods will be attempted before decontamination with fluids. A steam cleaner and hand tools will generate decontamination fluids. If necessary, decontamination water will be contained in a decontamination pad constructed so that collected water can be pumped into waste containers. Decontamination fluids generated during decontaminating equipment will be added to the well purge water associated with the equipment and sampled to support the hazardous waste determination.

Sample equipment such as split barrel samplers and spoons will be decontaminated following each use. Typical equipment decontamination involves removal of large soil particles with a brush or wipes followed by a soapy water wash and numerous rinses with tap water and deionized water.

The estimated volume of decontamination water produced during the FSP unsaturated zone activities is 568 L (150 gal). The estimated volume of decontamination water produced during the saturated zone drilling and sampling is estimated at 189 L (50 gal), assuming 38 L (10 gal) is generated at each borehole well. Sample equipment will be the primary LTMP activity equipment that will have to be decontaminated. The estimated volume of decontamination water produced during the LTMP baseline sampling is about 356 L (94 gal), assuming 7.6 L (2 gal) is generated at each site. Groundwater monitoring for 20 years is estimated to produce 2,725 L (720 gal) of decontamination fluid.

3.9 Contaminated Equipment

Contaminated equipment would become a waste stream if it could not be sufficiently decontaminated or reused for another drilling program and if disposal was required. This type of waste would most likely include drill pipe, core barrels, and other downhole equipment used to core and sample boreholes. The generation of this waste stream is very unlikely based on past experience and frequent decontamination efforts by drilling crews that mitigate the possibility of contaminated equipment.

3.10 Miscellaneous Wastes

Miscellaneous wastes such as trash, labels, rags, and other miscellaneous debris may be generated during the project. The volume of miscellaneous waste generated during the Plume FSP activities (sat and unsat) is estimated at 0.76 m^3 (1 yd^3).

The volume of miscellaneous waste generated during the LTMP groundwater monitoring is estimated to be less than 0.76 m^3 (1 yd^3) for 47 wells and 3.8 m^3 (5 yd^3) for 18 wells for 20 years assuming 0.19 m^3 (0.25 yd^3) is generated each year.

3.11 New Waste Streams

Any new waste streams must be identified and characterized. At the time of generation, a hazardous waste determination must be completed, documented, and approved through WGS. Storage, additional characterization, treatment, and final disposition of the waste will be based on the hazardous waste determination. If process knowledge is not sufficient to characterize the waste, sampling and analysis will be done to complete the characterization of the new waste stream.

3.12 Perched Water

Based on past wells completed in the area, there will be no perched water encountered during drilling of the new wells.

4. WASTE STREAM CHARACTERIZATION AND MANAGEMENT

All waste generated during the Group 5 SRPA project will be characterized before disposal. Based on this characterization, hazardous waste determinations will be performed. A waste profile (Appendix D of the *Waste Management Plan for the Staging and Storage Annex,* DOE-ID 2002b) will be completed for all Group 5 wastes sent to the Staging and Storage Annex (SSA) for staging. Since the drilling and sampling activities will encounter both saturated and unsaturated conditions, different types of solid waste could be generated. The SRPA groundwater is likely to be contaminated with radionuclides while the unsaturated zone outside of INTEC is not considered contaminated. Hazardous waste determinations will be prepared for each waste stream. These waste determinations could include IW, LLW, MLLW, or RCRA-characteristic hazardous waste. Except for industrial waste, waste will be stored in the SSA prior to treatment or disposal. Characterization and management of waste in the SSA will be conducted according to applicable controlling documents. Waste stored in the SSA will be treated and disposed of in the Staging, Storage, Sizing, and Treatment Facility (SSSTF)/INEEL Comprehensive Environmental, Response, Compensation and Liability Act (CERCLA) Disposal Facility (ICDF).

The groundwater downgradient of INTEC has been impacted by past releases from the facility, primarily through the Idaho Chemical Processing Plant injection well (CPP-3). Wastes that were injected into the well would now, if managed, be considered listed wastes. The groundwater from the SRPA, if generated as a waste, would therefore carry the listed waste numbers upon active management by way of the "contained-in" rule. The State of Idaho Department of Environmental Quality (IDEQ) issued a conditional no-longer-contained-in (NLCI) determination for the SRPA in the vicinity of INTEC on August 21, 2000 (Monson 2000). This NLCI identified specific contingencies that must be met in order to receive an IDEQ determination that the purge waters on the specific wells do not contain hazardous wastes. A clarification letter, dated September 12, 2000, from DOE-ID to IDEQ (Guymon 2000) established that the CPP-3 injection well was not intended to be used as a monitoring well subject to the conditional NLCI determination. Groundwater that is generated from the implementation of the Group 5 MSIP activities will be managed in accordance with a hazardous waste determination. This determination will consider the characteristics of the waste, source of the waste, and any attenuating factors such as the August 2000 IDEQ conditional NLCI and subsequent sampling activities, technical clarifications, and revisions to the conditional NLCI.

Any waste stream determined through analytical testing to contain radionuclides above the risk-based action level for no action (in soil) or MCLs (in water) will be classified as a LLW. The risk-based action level for no action (institutional or other controls) in soil is 23 pCi/g for Cs-137 (DOE-ID 1999). This action level is valid only if no other radiological contaminants are present. LLW will be stored in the SSA pending disposition in the ICDF. Wastes generated outside the area of contamination will have to meet the Land Disposal Restrictions as stated in the ROD. For water, MCLs will be used to guide waste stream characterization. All water will be contained pending analytical testing at the laboratory. Water containing levels of radionuclides above MCLs will be characterized as LLW. Table 4-1 provides a summary of the MCLs for those COCs identified for Group 5.

Table 4-2 summarizes the waste characterization possibilities for the waste streams generated during the Group 5 SRPA project as described in Section 3.

Most of the Group 5 SRPA project will generate PPE that is IW since the drilling locations are areas with no known or suspected surface contamination. This PPE will be bagged for disposal at the INEEL Landfill Complex. PPE generated during drilling in the saturated zone may be LLW and will be containerized and stored in the SSA pending disposition.

Table 4-1. Maximum contaminant levels.

Contaminant of Concern	Maximum Contaminant Levels	Decay Type
Beta-gamma emitting radionuclides	Total of beta-gamma emitting radionuclides shall not exceed 4 mrem/yr effective dose equivalent[a]	Beta-gamma
Sr-90 and daughters[b]	8 pCi/L	Beta
Tritium[a] (H-3)	20,000 pCi/L	Beta
I-129	1 pCi/L[b]	Beta-gamma
Alpha-emitting radionuclides	15 pCi/L total alpha-emitting radionuclides[c]	Alpha
Uranium and daughters	15 pCi/L	Alpha
Np-237 and daughters	15 pCi/L	Alpha
Plutonium and daughters	15 pCi/L	Alpha
Am-241 and daughters	15 pCi/L	Alpha
Nonradionuclides		
Chromium	100 μg/L	NA
Mercury	2 μg/L	NA

a. Both Sr-90 and H-3 contribute toward the total of 4 mrem/yr.
b. Derived concentration if only beta-gamma radionuclide is present.
c. All alpha emitters count when determining if the 15-pCi/L MCL is exceeded.

Table 4-2. SRPA monitoring well installation–unused/unaltered sample material.

OU 3-13 Waste Stream	Industrial	Low-Level Waste	Low-Level Mixed[a]	RCRA Characteristic[b]
Personal protective equipment	O[c]	O	O	X[d]
Unused/unaltered sample material	X	O	O	X
Drill cuttings-unsaturated	O	X	O	X
Drill cuttings-saturated	X	X	O	O
Analytical residues	O	O	X	X
Sample containers	X	O	O	X
Petroleum product spills	O	X	X	X
Purge water (saturated zone)	X	X	O	O
Decontamination fluids	X	X	O	X
Contaminated equipment	Not possible	X	O	O
Miscellaneous waste	O	X	X	X

a. MLLW for these waste streams would be LLW and RCRA-characteristic or listed hazardous waste.
b. RCRA characteristic waste per 40 CFR 261.24.
c. O denotes probable (most likely) characterization for the waste stream.
d. X denotes possible characterization for the waste stream.

Cores that do not exhibit elevated levels of radioactivity will be stored/archived at the USGS core library for future use. Unused sample material may be either returned to the place of origin and not be considered waste or may be containerized and stored in the SSA pending treatment or disposal.

Cuttings generated during drilling above the saturated zone will not be impacted by radionuclides. These cuttings will be discharged to the ground surface in the vicinity of the drill pad. However, the cuttings from the saturated zone are likely to contain radionuclides. The cuttings will be containerized and stored until sampling results are available. If the concentrations in the cuttings are below the remediation goals or action levels for Group 3 sites, the cuttings may be used for other needs at the SSSTF and ICDF according to the *Institutional Control Plan for the INTEC Waste Area Group 3, Operable Unit 3-13* (DOE-ID 2003b). Cuttings above the risk-based action levels will be stored in the SSA awaiting disposition to the ICDF.

Analytical residues/sample preservative residues would likely be considered RCRA-characteristic waste if not neutralized by the laboratory. Analytical residues/sample preservative residues will be stored and disposed by the offsite laboratory in accordance with their SAM contract.

Sample containers that become waste could be classified as RCRA-listed waste based on the preservatives used or may also be LLW. These wastes will be stored at the SSA for eventual disposal in the ICDF.

Used petroleum spill kit material will be classified as IW, stored in appropriate containers, and dispositioned in the INEEL Landfill Complex.

Purge water will be managed as either LLW, RCRA characteristic, or MLLW (if RCRA characteristic and LLW). Purge water will be containerized and stored in the SSA until analytical results are available and appropriate disposition can be determined. Purge water will most likely be dispositioned in the ICDF evaporation pond or other approved facility.

Decontamination fluids, if generated, would be containerized and stored in the SSA for eventual disposal in the ICDF. Generation of contaminated equipment waste is very unlikely; however, if generated, contaminated equipment would be expected to be LLW and would be stored in the SSA until dispositioned in the ICDF. Clean miscellaneous waste would be segregated for disposition to the INEEL Landfill Complex. All other miscellaneous waste would be classified-stored in the SSA awaiting disposal at the ICDF.

5. WASTE STREAM STAGING AND WASTE MINIMIZATION

This section outlines waste stream staging and waste minimization during Group 5 activities.

5.1 Waste Staging, Inspection, and Recordkeeping

Staging of the various waste streams generated during these drilling programs is dependent on the final disposition of the waste. Only industrial waste generated during the Group 5 SRPA project will be disposed of in the INEEL Landfill Complex at CFA. Waste streams will either be disposed of at the ICDF or the INEEL Landfill Complex at the CFA. Prior to the construction of the ICDF, waste streams, which are characterized as LLW, RCRA-hazardous, or MLLW, will be stored in the SSA and managed according to applicable documents. Inspection of the staging area, container requirements, recordkeeping, and labeling will be conducted according to applicable documents and are therefore not presented in this WMP.

Proper record management will ensure the availability of information and compliance with applicable reporting requirements. The INEEL Waste Tracking System (IWTS) will be used for recordkeeping and tracking wastes generated by the project that will be managed at the ICDF Complex. Waste generated during the OU 3-13, Group 5, SRPA Project will be transported according to the Group 5 ARARs and ICDF requirements, as applicable. Packaging and Transportation personnel and WGS are responsible for shipping all CERCLA waste. Personnel who have completed INEEL training transport industrial wastes to the INEEL Landfill Complex as well as the appropriate paperwork for waste transport as specified by the *INEEL Waste Acceptance Criteria* (DOE-ID 2002c). WGS and Packaging and Transportation personnel are available to provide technical assistance for the transport of industrial waste.

5.2 Waste Minimization and Segregation

Waste minimization for this project will primarily be achieved through design and planning to maintain efficient operations and ensure wastes are not unnecessarily generated. To achieve this goal, waste streams will be segregated primarily by the field activity being completed at the time of generation. For example, different waste streams will be generated during drilling, dependent on whether the drilling is in a zone of saturation.

Industrial wastes do not require segregation by type (except for liquids); therefore, containers will be identified as industrial waste and maintained outside the work area for a separate collection. Containers for the collection of LLW, RCRA-hazardous waste, or MLLW will be clearly labeled to identify waste type and will be maintained inside the work area until removal for subsequent waste management activities.

Any of the above information unknown when the waste is labeled may be added when the information is known. WGS will provide unique bar codes and serial numbers. A new bar code will be affixed to each container when waste is first placed in the container. Additionally, waste labels must be visible, legibly printed or stenciled, and placed so that a full set of labels and markings is visible. Please refer to the *Idaho National Engineering and Environmental Laboratory Waste Acceptance Criteria* (DOE-ID 2002c), Section 4.4 for additional labeling information.

6. REFERENCES

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Appendix A

ARARs for OU 3-13 Waste Management

Table A-1. ARARs for the OU 3-13 Group 5, SRPA, project waste management.

Alternative/ARARs citation	Title	Applicable, or Relevant and Appropriate (R&A), or TBC	Comments
IDAPA 16.01.05.006 (40 CFR 262)	Identification and Listing of Hazardous Waste	Applicable	Describes regulatory requirements imposed on hazardous-waste generators.
IDAPA 58.01.05.006 (40 CFR 262.11)	Hazardous Waste Determination	Applicable	Establishes the requirement for preparing hazardous waste determinations for all wastes.
IDAPA 58.01.05.08 (40 CFR 264.114)	Disposal or Decontamination of Equipment Structures and Soil	Applicable	Establishes proper disposal and decontamination during closure.
IDAPA 58.01.11.200(a) (40 CFR 141)	Groundwater Quality Standards	Applicable	Establishes the drinking water standards for gross alpha particle activity, combined beta/photon emitters, combined radium-226 and radium-228, strontium-90, and tritium, in determining if groundwater is low-level waste.